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DEVELOPMENT AND EVALUATION OF A ONE-SEMESTER STENOGRAPHY COURSE.
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THIS STUDY WAS UNDERTAKEN TO DESIGN A NEW SCOPE AND SEQUENCE FOR A SHORTHAND AND TRANSCRIPTION COURSE WHICH WOULD FIT A ONE-SEMESTER STENOGRAPHY PROGRAM. A PACKAGE OF INSTRUCTIONAL MATERIALS, CALLED A SHORTHAND STRUCTURED-LEARNING PROGRAM, WAS DEVELOPED WHICH INCLUDED A TEXTBOOK, TAPES, FILM CLIPS, AND TRANSPARENCIES. THREE SCHOOLS PARTICIPATED IN THE PROGRAM--A HIGH SCHOOL, AN ADULT SCHOOL, AND A STATE COLLEGE. AT THEIR RESPECTIVE CLASS BEGINNING DATES, STUDENTS IN EACH GROUP TOOK THE BUSINESS ENGLISH TEST. AN ANALYSIS OF VARIANCE SHOWED THAT THE STUDENTS WERE FROM DIFFERENT POPULATIONS. A FINAL EXAMINATION, GIVEN UPON COMPLETION OF THE PROGRAM, REVEALED THAT THE STUDENTS ATTAINED ESSENTIALLY THE SAME LEVEL OF PROFICIENCY. THE PROGRAM TOOK A HIGH OF 95 HOURS TO A LOW OF 72 HOURS FOR COMPLETION. THE GENERALLY ACCEPTED PLAN FOR TEACHING STENOGRAPHY INVOLVES FOUR SEMESTERS OF STUDY. THUS, IT WAS CONCLUDED THAT THE SHORTHAND STRUCTURED-LEARNING PROGRAM PROVIDES A MEANS FOR SHORTENING INSTRUCTION TIME, AND PRESENTS A FLEXIBLE PROGRAM FOR AVERAGE AND TALENTED STUDENTS. (JC)

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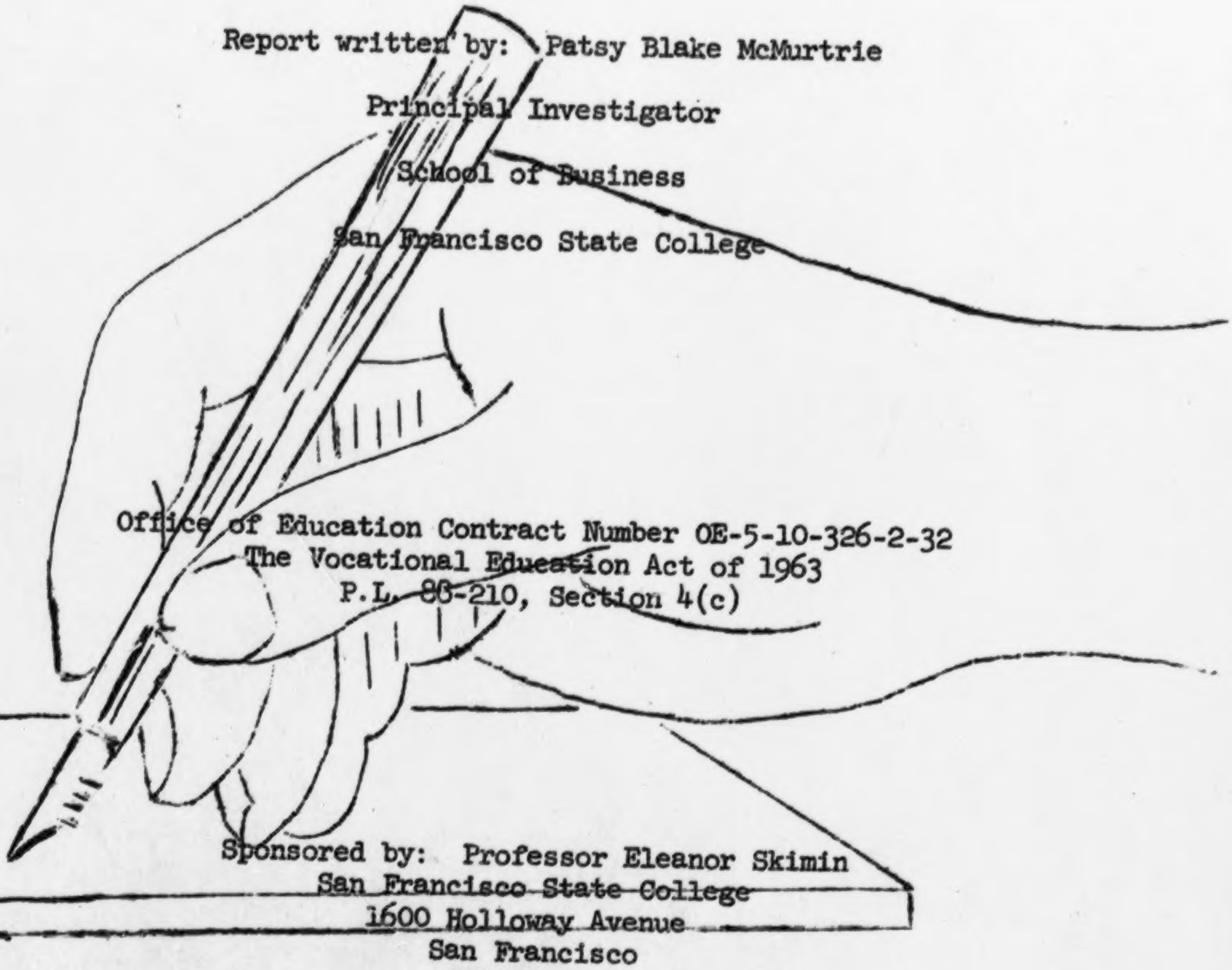
DEVELOPMENT AND EVALUATION OF A
ONE-SEMESTER STENOGRAPHY COURSE



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Sponsored by: Professor Eleanor Skimin
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June 1966

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SUMMARY OF PROJECT

(a) **Grant Number:** Office of Education Contract Number OE-5-10-326-2-32

(b) **Title:** Development and Evaluation of a One-Semester Stenography Course

(c) **Investigator:** Patsy Blake McMurtrie, Instructor, School of Business
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(e) **Duration:** June 1, 1965, to May 31, 1966

(f) **Purpose:** The purpose of this project was to design a new scope and sequence of shorthand and transcription instructional materials to fit a one-semester stenography program, and to evaluate these materials as a pilot study on three levels, high school, adult education, and college.

(g) **Procedures:** The first step of this project was the development of instructional materials. It was decided that a package of instructional materials for this one-semester stenography course referred to hereinafter as Shorthand Structured-Learning Program would include a textbook, tapes, transparencies, four-minute film clips, and basic instructios for teacher use of an overhead projector. The characteristic guidelines used in preparing and combining into a single package the instructional materials for this one-semester stenography course were:

1. it would be based upon the writing principles and theories of Gregg shorthand;

2. it would be a teachable course and adaptable to the needs of average and talented high school, adult education, and college students;

3. it would be flexible enough to provide techniques for maintaining the interest of an average class, yet allowing and furnishing challenging work for the talented students;

4. it would teach the necessary processes required to write and transcribe shorthand; namely, reasoning, analyzing, recalling, associating, decision making, mental organizing and coordinating, translating, and the manual skills of writing and machine transcribing; (In other words, attentive learning versus mechanical learning.)

5. it would teach the above processes by leading the students through simplified examples of the theoretical applications of writing and transcribing shorthand.

The reproduction of textbooks was completed by the Duplicating Center of the San Francisco State College in time for the fall opening of school. The Audio-Visual Center of the San Francisco State College also cooperated in making their experts and facilities available for the preparation of tapes, transparencies, and films. Development of new materials, revising as well as checking, and refining the completed instructional materials, were an on-going part of the project.

The second step of the project was to test and evaluate the course for soundness of design and conception by teaching three educational levels in experimental classes at a high school, adult school, and senior college. This experimental teaching was undertaken to give an objective and general indication of the effectiveness of the course and to determine the feasibility of this proposed approach to teaching a one-semester stenography course.

Material Development

The materials prepared for the Shorthand Structured-Learning Program includes a textbook, teaching-learning tapes correlated with each lesson in the textbook, four instructional films, charts, and transparencies.

Typewriter transcription of student notes was built into this program to begin with textbook Lesson 6 and continues with each lesson thereafter.

A definition of the terms used in the report of this project is given below to give the reader of this Summary an indication of how the Shorthand Structured-Learning Program differs from the traditional methods of shorthand presentation and instruction:

SEMI-PROGRAMMED FORMAT: A physical columnar layout for theory presentations in a series of small associated word units. Writing space is provided for the learner to respond with a similarly written shorthand outline. The learner always has a writing pattern to follow when constructing his own outlines.

Summary 4

HIGH FREQUENCY WORDS: Commonly known as Brief Forms in other methods of shorthand presentations. High Frequency Words (and Brief Forms) are shorthand abbreviations for certain English words which are used very frequently. They are expected to be memorized by the student for automatic recall and instantaneous writing.

PROGRAMMED WORDS: The presentation of theory through "Programmed Words" is designed to move the student steadily toward a terminal writing response using new theory. The identifying characteristic of a specific writing theory is gradually built up, with the learner constructing outlines through given examples, so that he (the learner) can acquire instant writing responses necessary for intelligent understanding, based upon reasoning, recalling, associating, decision making, and mental organizing and coordinating.

SOUND AND PATTERN PRACTICE: A pair of words or group of words followed by a similar sounding pair or group of words that have the same pattern of writing. This practice is intended to build up subconscious and instantaneous writing habits upon hearing the spoken word(s). In this way, the theory of writing specific sounds introduced through Programmed Words is reinforced by Sound and Pattern Practice.

REINFORCEMENT: Through a reverse and associative sentence plan using words of the newly learned theory, the learner is given an opportunity to transcribe and write connected matter. The learner is constructing outlines from the patterned sentence which calls for independent and careful thinking.

REINFORCEMENT PLUS: A consolidation of all theory and High Frequency Words and Phrases learned to a certain point in the textbook. Reinforcement Plus is in the form of short letters, stories, extensive Sound and Pattern Practice, and three weeks of daily entries in a "New Employee's Diary." Reinforcement Plus follows Section I, Lesson 10; Section II, Lesson 15; Section III, Lesson 20; and Section IV, Lesson 25.

TEACHING-LEARNING TAPES: The teaching-learning tapes developed for each lesson in the textbook guide the students every minute in acquiring correct shorthand writing patterns by asking for active learner participation beyond the traditional shorthand dictation tapes. These tapes depart from the mere mechanical writing of shorthand at varying rates of speed. Rather, these teaching-learning tapes require the learner to be actively engaged and concerned with his notes by having him listen, write, check, correct, review, and read aloud in unison with the dictator on the tapes. The tapes direct the learner to work back and forth with his textbook and with his own shorthand notes. In this way, he is not allowed to stray from concentrating on what he is hearing and writing, while being assured he is correctly constructing his outlines. The tape's reading and writing rates, as well as suggested transcribing rates, are at the average standards given for each lesson in the textbook. Also, the study patterns presented in the tapes offer a self-practice plan that can bring about rapid progression based upon the abilities of the individual student.

READER IN ELEMENTARY ECONOMICS: A six-unit Reader in Elementary Economics was prepared to follow the Structured-Learning textbook. This interdisciplinary approach to reviewing the theory of writing shorthand is accomplished by discussing such elementary economic topics as our price system and how economic growth comes about; gold as an international medium of exchange and the importance of the Gold Standard; and unemployment, poverty and automation. Each unit contains approximately 1800 words, or a total of approximately 11,000 words, which reinforces the theory of writing shorthand and gives the student an opportunity to broaden his vocabulary and understanding of elementary economics.

Participating Schools

The three schools that participated in the project were the John Adams Adult School and San Francisco State College, located in San Francisco, and the El Camino High School, located in South San Francisco.

All schools participating in the project were agreeable to supplying the necessary teaching equipment and typewriters needed to conduct this one-semester stenography experiment. El Camino High School and John Adams Adult School provided one of their regular typewriting classrooms for this stenography course. At San Francisco State College the regular shorthand laboratory was used. Students at the John Adams Adult School and San Francisco State College had access to electric typewriters; students at the El Camino High School used manual typewriters.

Overhead projectors were provided at the three schools. All theory presentations were made by the instructors writing on a left-hand roll-type overhead projector. All lights in the classrooms were left on and students did not have any difficulty seeing the projected black writing on the overhead screen. The overhead projector was also used to present high frequency words (brief forms), motion study, letters, and stories on previously prepared transparencies.

At El Camino High School and John Adams Adult School a single tape recorder was provided for playing a tape to the entire class. Students at San Francisco State College were provided with listening stations equipped with headtype earphones.

The Audio-Visual Department of the San Francisco State College provided filming, editing, cutting, and assembling services for the instructional films. In addition, this department made available an eight millimeter, Technicolor 800, Instant Movie Projector, for use in the experimental classrooms.

The Students

At the John Adams Adult School, twelve students participated in the project under a Manpower Development and Training Act course titled No. 5057-007, Stenographer Entry. Since this experimental one-semester stenography course required students to have a minimum typewriting speed of 30 words per minute, it was necessary to begin this class by first teaching typewriting. From December 13, 1965, through January 14, 1966, in a daily two-hour class, for a total of 46 hours, students received instruction in typewriting. At the end of the typewriting instruction, the minimum typewriting rate for a five-minute test was 30 words per minute; the maximum rate was 42 words per minute.

Thirty-seven high school students who had no previous experience with shorthand enrolled in the El Camino High School Shorthand I class in September 1965. Of this original enrollment, thirty-one remained in the class to complete the course. All students in this class had completed a minimum of one semester to a maximum of four semesters of typewriting. The range of five-minute timed typewriting scores were from a high of 65 words per minute to a low of 30 words per minute.

There were thirty-one students originally enrolled in the beginning shorthand class at San Francisco State College. Two students dropped the course when they found that their unit course load was too heavy to permit them to devote sufficient time to the study of shorthand. The 29 remaining students scored from a high of 70 words per minute to a low of 30 words per minute on a five-minute timed writing at the beginning of the course.

Summary 9

The initial enrollment in the Shorthand Structured-Learning Program for the three groups numbered four males and 83 females. The total number of subjects who completed the course was 72, two males and seventy females. A total dropout of two males and thirteen females, or 17% of the total initial enrollment, can be considered a low dropout percentage for first-semester stenography classes.

At their respective class beginning dates, students in each group took the Business English Test; one in a series of three tests of The Dailey Vocational Tests. This test measured knowledge of spelling, punctuation, capitalization, and correct usage or grammar. All tests were mechanically scored at the Measurement Research Center in Iowa City, Iowa.

(h) Results and Conclusions: There seems to be no reason for the project initiators to doubt that the Shorthand Structured-Learning Program, including shorthand and transcription, could be taught within a time period of one semester. The reader will understand that there was considerable classroom time spent in caring for and discussing details of the instructional materials that would not be necessary in future classes. It was the express intent of this project that all the materials undergo as close attention and scrutiny as possible in this developmental phase.

The high school class received a total of 95 hours 50 minutes instruction time; the college class received a total instruction time of 72 hours 48 minutes and the adult class received a total instruction time of 92 hours 30 minutes.

Summary 10

A final examination test was taped so that the three groups would receive the identical examination material and that there would be no variance in speed of dictation, pronunciation, voice inflection, or the admission of any other variable that could influence the test results. No part of the taped material was previewed for the three groups. The test consisted of a letter containing 165 total actual words dictated at the rate of 60 actual words per minute and a letter containing 163 total actual words dictated at the rate of 80 actual words per minute. A test of the hypothesis that the three groups would score the same in the final examination was made using the Kruskal-Wallis H test. The results of the H test showed that the three groups were essentially the same in achievement as measured by their final examination grades.

The results of the Business English Test scores for the three groups was used to test the hypothesis that all students were from the same population in respect to variance on this test. An analysis of variance test showed that the hypothesis could be rejected; that the differences in the Business English Test scores are not due to chance. Thus, it can be concluded that even though the three groups were significantly different in their English achievement as measured by the Business English Test, they attain essentially the same level of proficiency in the final shorthand and transcription examination.

Summary 11

The findings of this developmental project lead to the conclusion that combining the writing of shorthand and beginning transcription as presented in the Shorthand Structured-Learning Program can be taught within the generally accepted one-semester time interval.

The implications of this pilot study seem worthy of being brought to the attention of business and academic educators, administrators, curriculum coordinators, and organizational planning people at all levels of education. The following paragraphs are written with the ideas in mind that introduced the reader to Chapters I and II of this report.

The first, and perhaps most crucial implication that can be drawn from this pilot study pertains to the people working with the Manpower Development and Training Act program. The group of MDTA adults in this project were from minority races, from various types of backgrounds, and with little or no educational successes. Yet, after working for a few months with the stenography program as offered at the John Adams Adult School, these women were able to orient much of their thinking and attitudes toward finding a place for themselves in the job market. It seems very likely that the Shorthand Structured-Learning Program gave them a needed realistic approach to learning stenographic skills. They could immediately see and understand the necessity of writing legible and correct outlines; the necessity of developing their typewriting skills; the necessity of coordinating the physical and mental functions that are demanded of a stenographer trainee. The important aspect of the program was that they were actively engaged in a method of learning at which they could succeed.

An equally important point to bring out about this study is the time interval spent in working through the Structured-Learning Program. A high of 95 hours to a low of 72 hours to complete this program (shorthand and beginning transcription) leads to a favorable comparison of it over the traditional two-semester beginning shorthand time allowance. Today, the generally accepted plan for teaching stenography is to spend two semesters, approximately 80 hours classroom instruction per semester, or 160 hours classroom instruction, learning only to read and write shorthand. Then, a second year, approximately 160 hours classroom instruction, is spent teaching shorthand and typewriter transcription. It seems reasonable and feasible to believe that the Shorthand Structured-Learning Program can reduce by half the amount of time presently being used to train stenographers.

The Shorthand Structured-Learning Program meets today's trends by providing a program that shortens instruction time, applies an interdisciplinary approach to instruction, and presents a flexible program for both the average and talented students.

TABLE OF CONTENTS

CHAPTER PAGE

I. INTRODUCTION

A. Origin of the Project. 1
B. Related Research 1
C. Analysis of the Project. 5

II. OBJECTIVES

A. Importance of the Project. 9
B. Objectives 10

III. PROCEDURES, THE SCHOOLS, AND THE STUDENTS

A. General Design 13
B. Participating Schools. 15
C. The Classrooms and Instructional Equipment 18
D. Composition of Experimental Classes. 19

IV. MATERIAL DEVELOPMENT

A. Definition of Terms. 42
B. Textbook 44
C. Tapes. 49
D. Instructional Films. 51
E. Overhead Projector 53
F. Transparencies 54
G. Charts 54

CHAPTER PAGE

V. USE, DATA, AND FINDINGS

A. Time Schedules 56

B. Motion Study Analysis. 60

C. Questionnaire. 61

D. Analysis of Data and Findings. 69

VI. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

A. Conclusions. 79

B. Implications 80

C. Recommendations. 82

APPENDICES 84

BIBLIOGRAPHY 91

LIST OF TABLES

TABLE PAGE

I. Group A, Composition of High School Class 22

II. Group B, Composition of College Class 26

III. Group C, Composition of Adult Class 32

IV. Composition of Total Experimental Classes Groups A, B, and C. 37

V. Group A, English and Typewriting Backgrounds. 38

VI. Group B, English and Typewriting Backgrounds. 39

VII. Group C, English and Typewriting Backgrounds. 40

VIII. Time Schedules Followed by the Three Experimental Classes to Complete Textbook, Shorthand Structured-Learning Program. 59

IX. Evaluation of Shorthand Structured-Learning Program 63

X. Final Examination Means by Groups 70

XI. H Test. 71

XII. Final Examination, Group A. 72

XIII. Final Examination, Group B. 73

XIV. Final Examination, Group C. 74

XV. Business English Test 75

XVI. Analysis of Variance Table, Business English Test Groups A, B, and C. 76

I. INTRODUCTION

A. Origin of the Project

A review of the professional business education journals reveals a continuing list of articles and studies devoted to problem areas in teaching shorthand. The most frequently reported problem areas in stenography courses are dropouts, motivation devices, standards, grades, tests, length of instruction time, and selection of students. At the same time, there is a concurrence among educators, businessmen, the government and the journals of popular opinion about the labor market's existing need for qualified stenographers and secretaries. There also seems to be general agreement among these same people that our schools are not developing stenography education courses which lead to this marketable skill.

It seems paradoxical that business and the government should look to the schools for trained stenographers and secretaries in sufficient numbers to meet their requirements and yet many of our stenography students are unable to go beyond the first semester of shorthand.

B. Related Research

The reader's attention is directed to the bibliography that accompanies this report. This bibliography represents a portion of the research undertaken to support this project and the need for a re-evaluation of the present methods and materials for teaching and learning shorthand. For reasons of space economy and currency of thought among business educators, the bibliography covers a time period of 1943 to 1966. It is interesting to note that the most current listing, Business Education Meets the Challenges of Change, was added in the spring of 1966 during the preparation of this report. While this entire yearbook by the National Business Education Association has meaning and direct implications for all business educators, the writer would like to call particular attention to the following chapters. These chapters, specifically, give weight and emphasize the very things that were attempted by this project. The chapters are:

No. 12, "State Plans for Vocational Office Occupations," Peter Hains and Brendon Coleman; No. 13, "Area Vocational Schools," William Selden; No. 14, "Adult Education Programs," Robert Finch; No. 20, "A Philosophy of Business Education to Meet Change," Elvin S. Eyster; and No. 22, "Research, Experimentation, and Innovation Needed For Change," Mildred Hillestad.

It is generally agreed that the telling factor of whether or not shorthand has been mastered rests upon the student's ability to take and transcribe unfamiliar material which, very often, contains a vocabulary of infrequently used words. Rowe's[1] study to reveal some of the characteristics of the writing of infrequently used words showed that students followed a pattern. The pattern showed that there was hesitation in constructing outlines preceding and within the word,and the use of frequently used words and syllables to construct the infrequently used word. He also found that there was much time lost in passing from one word to another and in connecting the parts of words. Interestingly enough, when students were faced with an unfamiliar word, they thought they did not hear the word plainly or they admitted that they were unfamiliar with its use and shorthand writing. Curtin[2] found a correlation of .50 between vocabulary level and shorthand errors. The Danielson[3] study found that if optimum growth in shorthand vocabulary was to be achieved, one of the primary emphasizes should be focused upon the building of a shorthand vocabulary. The latest and perhaps most significant research in recent years into the learning of shorthand was completed by Hillestad[4] in 1960. Hillestad concluded that vocabulary level contributes more than any other variable in predicting difficulty of dictated material. She recommended certain revisions of the Gregg shorthand system and, most significantly, suggested that research was needed on a new arrangement of beginning shorthand materials aimed at quickly building a basic vocabularly.

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[1] Clyde Eugene Rowe, The Writing of Infrequently Used Words in Shorthand (New York, 1943).

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[2] Rita Curtin, "The Relationship Between Selected Factors and Difficulty of Dictated Material," National Business Education Quarterly (Fall 1959).

[3] Harriet Danielson, "The Relationship Between Competency in Shorthand Vocabulary and Achievement in Shorthand Dictation," National Business Education Quarterly (Fall 1960).

[4] Mildred C. Hillestad, "Factors That Contribute to the Difficulty of Shorthand Dictation Material," The Delta Pi Epsilon Journal, IV (1962).

That there is no reason to delay presentation of the entire shorthand theory and principles of writing and beginning transcription beyond one semester can be supported by the following studies. Crawford[5] has reported success in presenting the theory of shorthand writing in 31 28-minute sessions. Reeves[6] has stated that her students learned the brief forms far ahead of the normal textbook plan and in a seven-week experimental program, Green[7] has written of success not only in presenting all the shorthand theory and principles, but also success with transcription beginning the first day of class. At Washington High School in Milwaukee, Wisconsin, a one-year shorthand pilot program was conducted in 1962-63.[8] In this program students learned all the theory in half a semester and began transcribing "with the early lessons." It was concluded that "Academically talented students can achieve in one year a vocational shorthand competency comparable to that attained by two-year students."

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[5] James T. Crawford, "Recent Findings in the Teaching of Shorthand and Typewriting," Ball State Commerce Journal (May 1960).

[6] Dorothy Reeves, "Making Good Teaching Better Through Selected Teaching Aids," Business Education Forum (February 1960).

[7] Alice C. Green, "Is Typewritten Transcription Too Long Delayed?" The Balance Sheet, XLV (May 1964).

[8] James A. Gawronski, "We Tried a One-Year Shorthand Program For Academically Talented Students," Business Education World, Vol. 44 (May 1964).

The findings of the Schlegel[9] study succinctly voice evidence for a one-semester stenography course by saying that more guidance is needed for selectivity of students for shorthand and transcription, and that transcription time is not only too limited but that it does not begin soon enough. Likewise, the words of Dr. Crawford express the objectives of this project: "We must consider in the future the possibility of trimming our presentations more; of developing more efficient methods of presentations; and probably capsuling many of the elements of shorthand theory so that it can be presented in considerably less time."

For a sixty-year historical review of shorthand and transcription in the United States, the reader is directed to Rankin's[10] 1963 doctoral dissertation, which lends support to the needed evolution and development of shorthand instructional materials.

C. Analysis of the Project

1. Statement of Purpose

The purpose of this project was to design a new scope and sequence of shorthand instructional materials to fit a one-semester program, and to evaluate these materials as a pilot study on three levels, high school, adult education, and college.

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[9] Sister Mary Joan Schlegel, "A Study of the Problems Involved and the Techniques Used in Teaching Transcription in Selected Catholic Secondary Schools in New England," National Business Education Quarterly (Fall 1961)

[10] Pearl M. Rankin, The Development of Transcribing Skill in Shorthand Instruction (1900-1960) (1963).

2. Elements of the Problem

Can shorthand and transcription instructional materials, including a set of pedagogical techniques for teaching the desired skills and for developing the desired attitudes about stenography, be capsuled into a one-semester stenography course?

Can students learn the theory of Gregg shorthand and beginning transcription in one semester of instruction?

Can beginning students of shorthand be taught to write shorthand outlines at the rate of one outline per second or faster?

Can students on three levels of instruction, high school, four-year college and adult education, use the same one-semester stenography instructional materials to learn the theory of Gregg shorthand and beginning transcription?

3. Delimitation of the Project

This project was delimited to the period of June 1965 to September 1965 for the assembly and semi-final preparations of the shorthand and transcription instructional materials in textbook and teaching-learning forms which had been in various creative stages for two years; to the period of September 1965 to January 1966 for the trial use of these instructional materials with a high school and a four-year college class; to the period of January 1966 to April 31, 1966, for the trial use of these instructional materials with an adult education class. During the time period September 1965 to April 1966 instructional materials were continuously being evaluated, revised, and refined.

4. Limitations of the Project

This project was designed to be a developmental phase of a one-semester stenography course. This preliminary experimental program should be followed by a larger research and experiment design to test and validate the results of the materials developed under this project.

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II. OBJECTIVES

A. Importance of the Project

Many educators think it will be a long time before the United States recovers from the shock of the first Sputnik, which sent the schools throughout our country into a different emphasis on education. Even a cursory examination of professional journals, as well as writings appearing in popular public magazines and newspapers, reveals a trend toward the shortening of instruction time for all subjects, integrated curriculum offerings, selection of students, and utilization of electronic teaching devices to enlarge course content. In addition to these changes, the working force in the United States is increasingly being expanded by the employment of women. No longer does marriage or the rearing of a family mean the end of women's careers in the business world.

At this time and place in our country's development, there is an urgency to the challenge facing the business educator. Perhaps the prime challenge that faces the business educator is to rid education of the stereotype definition of what constitutes "business education" and for whom business education courses have been designed. As for the stenography course developed under this project, it was designed to meet the current trends of an interdisciplinary approach to teaching shorthand and transcription, shorter instruction time, and the use of electronic teaching and learning devices. In addition, the course was designed to meet the challenges facing the business educator by (1) providing a course for rapid communication through symbol writing and machine transcription, (2) providing the high-level student with a one-semester stenography course that can enable him to secure employment, (3) providing a one-semester stenography course to replace the traditional "one-year beginning shorthand class," and (4) providing students with a capsuled one-semester skill course that appeals to individual abilities and learning rates and that will develop the individual's listening comprehension, rapid writing and transcribing skills, and analytical abilities. In brief, the course was designed to equip all students with a technological communication tool to enter today's world of "continuing education" of business employment or academic and cultural education.

B. Objectives

The objectives of this project were:

1. To develop and evaluate a complete one-semester stenography course as part of a two-phase program. The intent of this two-phase program will be to reduce by half the amount of time currently used to achieve the same ends. The preliminary experimental project should be followed by phase two, a larger research and experiment design to test and validate the results of phase one.

2. To determine the theory concepts and the related materials necessary to be contained in a basic stenography course and to determine the sequential organization of the content.

3. To discover and develop a set of pedogogical techniques for teaching the desired skills and information and for developing the desired attitudes about stenography.

4. To develop the necessary materials needed for classroom use and homework assignments.

5. To develop the necessary teacher materials, if the course materials themselves prove insufficient, for acquainting and training teachers in the use of this method of stenography instruction.

6. To develop a series of tests to evaluate the effectiveness of the course in satisfying the course objectives.

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III. PROCEDURES, THE SCHOOLS, AND THE STUDENTS

A. General Design

The general design of this study was to develop, try out, and refine a one-semester stenography course as the experimental phase of a two-phase program. The "one-semester stenography course," as referred to hereinafter, is to be an inclusive term which includes the writing of Gregg shorthand and beginning transcription. Hence, the purpose of this report is to describe (1) the materials developed under this grant, (2) the results of a one-semester trial use of these materials on three educational levels: a high school class, an adult education class, and a senior college class, and (3) the findings and recommendations of the project based upon class results and the reactions of students, teacher participant, project director and project sponsor.

The first step of this project was the development of instructional materials. This material development was initially started during April and May of the spring of 1965 when the project initiators received word from Washington, D.C., that approval had been given for the study. It was decided that a package of instructional materials for this one-semester stenography course would include a textbook, tapes, transparencies, four-minute film clips, and basic instructions for teacher use of an overhead projector. The characteristic guidelines used in preparing and combining into a single package the instructional materials for this one-semester stenography course were:

1. it would be based upon the writing principles and theories of Gregg shorthand;

2. it would be a teachable course and adaptable to the needs of average and talented high school, adult education, and college students;

3. it would be flexible enough to provide techniques for maintaining the interest of an average class, yet allowing and furnishing challenging work for the talented students.

4. it would teach the necessary processes required to write and transcribe shorthand; namely, reasoning, analyzing, recalling, associating, decision making, mental organizing and coordinating, translating, and the manual skills of writing and machine transcribing; (In other words, attentive learning versus mechanical learning.)

5. it would teach the above processes by leading the students through simplified examples of the theoretical applications of writing and transcribing Gregg shorthand.

The textbook and sufficient transparencies, tapes, and two introductional films for four weeks of class work were prepared during the time interval of May 1965 through September 3, 1965. The reproduction of 100 textbooks was completed by the Duplicating Center of the San Francisco State College in time for the fall opening of school. The Audio-Visual Center of the San Francisco State College also cooperated in making their experts and facilities available for the preparation of tapes, transparencies, and films. Development of new materials, revising as well as checking, and refining the completed instructional materials, were an on-going part of the project. A detailed description of the textbook and accompanying instructional materials is given in Chapter IV.

The second step of the project was to test and evaluate the course for soundness of design and conception by teaching three educational levels in experimental classes at a high school, adult school, and senior college. This experimental teaching was undertaken to give an objective and general indication of the effectiveness of the course and to determine the feasibility of this proposed approach to teaching a one-semester stenography course. The results of this experimental teaching are given in Chapter V.

It was the express intent and purpose of the project initiators that they, the participating teacher, and all students using these materials would maintain, insofar as possible, the highest level of scientific objectivity in the use, criticism, and evaluation of the textbook and other instructional materials. This objectivity was maintained through having open-end discussions at frequent intervals among the three groups of students with the project director, project sponsor, and teacher participant; the grading and evaluating of student notes and transcripts by knowledgeable shorthand writers who did not have a direct interest in the project; the answering of a questionnaire upon the completion of the textbook, and the tallying and classifying of student answers and criticisms to the questionnaires by three disinterested knowledgeable shorthand writers.

B. Participating Schools

During the summer of 1965 final arrangements were made to use the materials developed under this project at El Camino Senior High School, South San Francisco, John Adams Adult School, San Francisco, and San Francisco State College. A brief description of the cooperating schools follows:

High School

The high school participating in this project was El Camino Senior High School, one of two high schools in the South San Francisco Unified School District. El Camino High School is located in South San Francisco, California. South San Francisco is known as the "Industrial City" of the San Francisco Metropolitan Bay Area. It is the location of 250 industrial plants, employing over 11,500 employees.* The South San Francisco Unified School District's Vocational Education Program is a forward looking and expanding program with strong community interests and support by the administrators and the Board of Education.

It can be seen from this description of the community that students enrolled at El Camino High School may be grouped as having middle sociological-economic family backgrounds. El Camino High School also may be considered a typical comprehensive high school in that it is a four-year high school and its curriculum offerings include classes and training in academic, business education, and vocational education subjects. In 1965 the fall enrollment was approximately 1,100 students, with 625 students majoring in business.

Adult Education

The John Adams Adult School is part of the San Francisco Unified School District. It is centrally located in San Francisco, and it is the only day adult school in the system. In addition to granting accredited high school diplomas and post high school courses, the John Adams Adult School also offers programs under the following government-sponsored educational acts: P.L. 88-210, Vocational Education Act of 1963, P.L. 88-214 Manpower Development and Training Act Amendments of 1963, and P.L. 88-129 Economic Opportunity Act of 1964. Adult students can simultaneously participate in one of the governmental education programs and attend the adult day school classes to obtain a high school diploma.

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*Chamber of Commerce, South San Francisco

From what can be determined by this investigator, the John Adams Adult School is a unique adult school in the San Francisco Bay Area. The range of student ages is from a low in the early teenage bracket to a high of senior citizens in the sixty-odd age bracket. Students are from all walks of life and with educational backgrounds varying from elementary grades to university graduates. American-born citizens, naturalized citizens, and people from foreign countries, such as Japan, Korea, Mexico, Brazil and Europe, are enrolled in this adult school. The number of student class hours taught per month averages 40,000.

College

San Francisco State College is one of 16 campuses of the California State College System. The college is a multi-purpose coeducational institution of more than 16,000 students and 1,000 faculty. Its liberal education base offers a full range of degree and credential programs at the baccalaureate and master's levels.

The School of Business is made up of the following departments: Accounting, Business Education, Finance, Management, Marketing, Office Administration, and the Center for World Business. The Office Administration Department offers as elective courses open to all students Fundamentals of Secretarial Administration and Advanced Secretarial Administration. These courses have been designed especially for prospective teachers of shorthand and for administrative assistants and secretarial students.

C. The Classrooms and Instructional Equipment

All schools participating in the project were agreeable to supplying the necessary teaching equipment and typewriters needed to conduct this one-semester stenography experiment. El Camino High School and John Adams Adult School provided one of their regular typewriting classrooms for this stenography course. At San Francisco State College the regular shorthand laboratory was used. Students at the John Adams Adult School and San Francisco State College had access to electric typewriters; students at the El Camino High School used manual typewriters.

Overhead projectors were provided at the three schools. All theory presentations were made by the instructors writing on a lefthand roll-type overhead projector. All lights in the classroom were left on and students did not have any difficulty seeing the projected black writing on the overhead screen. The overhead projector was also used to present high frequency words (brief forms), motion study, letters, and stories on previously prepared transparencies.

At El Camino High School and John Adams Adult School a single Wollensak tape recorder was provided for playing a tape to the entire class. Students at San Francisco State College had use of the stenography laboratory where two-channel listening stations were provided for the project. Two Webster tape recorders were available to play different tapes at the same time.

The Audio-Visual Department of the San Francisco State College provided filming, editing, cutting, and assembling services for the instructional films. In addition, this department made available an eight millimeter, Technicolor 800, Instant Movie Projector, for use in the experimental classrooms.

D. Composition of Experimental Classes

El Camino High School

Thirty-seven students who had no previous experience with shorthand enrolled in the Shorthand I class in September 1965. Of this original enrollment, thirty-one remained in the class to complete the course. The six students who dropped this shorthand class gave the following reasons for not completing the course: two students changed their high school program and four students dropped the course in fear that they were failing and would not pass.

For the purposes of this report, this high school class will be known as Group A and individual students will be referred to as "1," "2," "3," etc. The descriptive data that follows in Table I pertains to the thirty-one students who completed the course.

The Business Department of the El Camino High School requires all students enrolling in Shorthand I to possess a minimum English grade of C. During the fourth week of school all students took the Business English Test; one in a series of three tests of The Dailey Vocational Tests. This test measured knowledge of spelling, punctuation, capitalization, and correct usage or grammar. This test was given to the three groups at the beginning of their working with the Shorthand Structured-Learning Program. The purpose for giving the test was to determine if the students' abilities in English would show any significant differences in their learning the mechanics of writing and transcribing their shorthand notes. The test was mechanically scored at the Measurement Research Center, Iowa City, Iowa. A detailed description of the Business English Test can be found in Appendix A.

All students in this class had completed a minimum of one semester to a maximum of four semesters of typewriting. The range of five-minute timed typewriting scores were from a high of 65 words per minute to a low of 30 words per minute.

Data concerning individual students was obtained from student record folders. Table I shows the composition of this high school class classified by sex, age, grade level, major, and scholastic standing.

As stated, Table I shows the thirty-one students who completed the Shorthand Structured-Learning Program. However, students from this group, Group A, included in the final statistical analysis, numbers 26 since five students were absent on one of the days the two statistical measuring devices used in this study were administered to the class. Specifically, three students were not present in class on the day the Business English Test was given and two students were not present in class the day the final shorthand examination was administered.

The Group A shorthand class was composed of 7 girls sixteen years of age, 22 girls seventeen years of age, and two girls eighteen years of age. The eleventh-year grade level was more than double in this class, there being 21 juniors and 10 seniors. The girls were disproportionately Business majors; 24 Business majors as opposed to 4 College Preparation majors and 3 Undeclared majors.

The measurement device used for the "Scholastic Standing" column was the Iowa Tests of Educational Development. This information is furnished the reader to give as complete a picture as possible of the individual students at the time they entered the shorthand class. The percentiles given are based on the ITED national norm. Appendix B gives details of the ITED. At El Camino High School, the ITED is given to all students in the first semester of their junior year. Hence, regardless of the student's present grade level, the scholastic standing scores within the group are comparable.

Table I

Group A, Composition of High School Class

Student	Sex	Age	Grade Level	Major	Scholastic* Standing
1	F	17	Jr.[1]	Bus.[2]	47
2	F	17	Jr.	Bus.	5
3	F	17	Jr.	Bus.	79
4	F	17	Jr.	Bus.	35
5	F	16	Jr.	Bus.	41
6	F	17	Jr.	Bus.	41
7	F	17	Sr.[3]	Bus.	69
8	F	16	Jr.	Bus.	35
9	F	N.A.[4]	Jr.	Bus.	47
10	F	17	Jr.	Bus.	35
11	F	17	Sr.	C.P.[5]	N.A.
12	F	17	Jr.	Bus.	79
13	F	17	Jr.	Bus.	29
14	F	17	Jr.	Bus.	58
15	F	16	Jr.	Bus.	69
16	F	17	Sr.	Und.[6]	47
17	F	17	Jr.	Bus.	N.A.
18	F	18	Sr.	C.P.	96
19	F	16	Jr.	Bus.	53
20	F	17	Jr.	Bus.	29
21	F	17	Sr.	Bus.	15
22	F	17	Jr.	Bus.	N.A.
23	F	17	Sr.	Bus.	69
24	F	17	Sr.	Und.	63
25	F	18	Sr.	C.P.	92
26	F	16	Jr.	Bus.	79
27	F	17	Jr.	Und.	63
28	F	17	Sr.	C.P.	94
29	F	16	Jr.	Bus.	35
30	F	16	Jr.	Bus.	79
31	F	17	Sr.	Bus.	N.A.

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*Percentile scores on the Iowa Tests of Educational Development based on "national median."

[1] Junior
[2] Business
[3] Senior
[4] Not Available
[5] College Prep
[6] Undeclared

San Francisco State College

There was an original enrollment of 31 students in the elective shorthand class offered by the School of Business at San Francisco State College. The college does not permit students to enroll in this course for credit if they have had previous (high school) shorthand instruction. The single student who audited the course is not included in this study. Twenty-nine students completed the course. The two students who dropped the course found that their unit course load was too heavy to permit them to devote sufficient time to the study of shorthand.

The college class will be referred to throughout this report as Group B and individual students will be listed as "1," "2," "3," etc. The descriptive data that follows pertains to the twenty-nine students who completed the course.

The Business English Test was administered to this class during the same week that it was given to the Group A students. It also was mechanically scored by the Measurement Research Center.

The students in this class had completed from a minimum of one-semester high school or college typewriting to a maximum of four high school semesters or two semesters of college typewriting. Student typewriting scores from a five-minute timed writing showed they were typing from a high of 70 words per minute to a low of 30 words per minute.

Data concerning individual students was obtained from student record folders. The composition of this class is given in Table II classified by sex, age, grade level, major, and scholastic standing.

Table II shows the 29 college students who completed the Shorthand Structured-Learning Program. The college shorthand class was composed of 27 females and two males. One male taking the course was a specially enrolled Liberian student, participating in the San Francisco State College Liberian Project. For this reason, there was no student folder available from which to obtain data about him. The other male student was a twenty-one year old Freshman, majoring in Business Education.

The age range for the female students was from a high of one student aged 36 years to a low of two students aged 18 years. Seven female students were 22 years of age; five, 21 years of age; two, 20 years of age; and nine, 19 years of age.

From the available student folders it was determined the class was made up of eleven freshmen, one sophomore, six juniors, five seniors, and one graduate student. The areas of concentration of this class follows:

Major	Number of Students
Art	2
Business	5
Business Education	4
English	4
History	1
Home Economics	1
Political Science	1
Social Welfare	2
Sociology	3
Spanish	1
Speech	1
Undeclared	4

It is interesting to note that of the 25 declared majors, sixteen students were from fields of concentration other than business. Also, that of the nine majors from the School of Business, only four students were enrolled in Business Education teacher training.

The measurement device used for the "Scholastic Standing" column was the Scholastic Aptitude Test. This information is furnished the reader to give as complete a picture as possible of the college students at the time they entered the shorthand class. The percentiles given are based upon SAT scores of 1,371 lower division students who registered for the 1964 Fall Semester and for whom cumulative GPA's were available at the end of the 1964-65 year. Students without a test score were transferees from other colleges or junior colleges, and their San Francisco State College student folders do not have such testing results. An explanation of the Scholastic Aptitude Test is given in Appendix C.

Table II

Group B, Composition of College Class

Student	Sex	Age	Grade Level	Major	Scholastic* Standing
1	F	19	Soph.[1] +[2]	Spanish	39
2	F	18	Sr.[3] -[4]	Art	20
3	F	22	Sr. +	English	88
4	F	21	Jr.[5] -	Business Education	N.A.[7]
5	F	N.A.	N.A.	Speech	N.A.
6	M	21	Frosh.[8] -	Business Education	N.A.
7	F	19	Frosh. +	Political Science	62
8	F	19	Frosh. +	Social Welfare	60
9	F	N.A.	N.A.	Social Welfare	N.A.
10	F	21	Jr. +	History	N.A.
11	F	22	Jr. +	English	N.A.
12	F	19	Frosh. +	Business	-1
13	F	22	Grad.[9]	English	N.A.
14	F	20	Sr. +	Business	6
15	F	21	Jr. +	Business Education	N.A.
16	F	N.A.	N.A.	Undeclared	N.A.
17	F	22	N.A.	Sociology	18
18	F	36	Frosh. +	Undeclared	N.A.
19	F	22	Frosh. +	Business Education	N.A.
20	F	18	Frosh. +	Business	31
21	F	19	Frosh. +	Sociology	20
22	F	19	Frosh. +	Sociology	20
23	F	21	Sr. -	Art	N.A.
24	M	N.A.	N.A.	Undeclared	N.A.
25	F	19	Frosh. +	Business	5
26	F	21	Jr. +	English	N.A.
27	F	20	Soph. +	Business	10
28	F	19	Frosh +	Home Economics	2
29	F	19	Jr. +	Undeclared	18

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*Percentile scores on the Scholastic Aptitude Test based on SFSC 1964-65 norm.

[1] Sophomore
[2] High (second semester of grade level)
[3] Senior
[4] Low (first semester of grade level)
[5] Junior
[6] Teacher Preparation
[7] Not Available
[8] Freshman
[9] Graduate

John Adams Adult School

The adult students participating in the project at the John Adams Adult School were simultaneously enrolled in the school's adult education courses, completing or reviewing the basic education skills for a high school diploma, and in the Manpower Development and Training Act Program No. 5057-007-I, Stenographer Entry. The students enrolled in this stenographer entry program were specially selected adults recommended by counselors from the California State Department of Employment, or by the recommendations of John Adams Adult School administrators and teachers. Counselors for the Department of Employment based their recommendations upon a combination of the following: (1) General Aptitude Test Battery scores, (2) California Achievement Test scores, when available, (3) through counseling processes focused upon the Kruder Interest Tests, and (4) the interest and motivation shown by the student in one-to-one rapport counseling sessions. The John Adams Adult School administrators and teachers based their recommendations upon: (1) California Achievement Test scores, when available, (2) past classroom experiences with and achievement of students, and (3) the interest and motivation shown by students in other classes.

A brief description of the Manpower Development and Training Act is given to lay a foundation for the reader's understanding of the nation-wide educational needs being met by this program. MDTA is an outgrowth of the philosophy of the Area Redevelopment Act of 1961. Quoting from Mr. Merle W. Wood, Director of Business Education, Oakland (California) Public Schools, "It /the Act/ recognized that people nationwide needed opportunities for training and retraining in vocational occupations not covered by NDEA. This was not a difficult decision to arrive at . . . as we study the wealth of statistics available from the U. S. Department of Labor. The educational attainment of the bulk of the nation's adult population is below the high school graduation level. In 1960, 59 per cent of the adults aged twenty-five or older had less than four years of high school education. In every state at least 40 per cent of the adult population has less than four years of high school. In one out of three states, over 60 per cent of the adults over twenty-five have not had the benefit of a full four-year high school education."[11]

Mr. Wood also reports the following statistics released by the U. S. Department of Commerce which indicate the 1950-1960 employment changes in the major occupational groups:

"Occupational Group	Per Cent of Change (plus equals increase; minus, decrease)
Professional and Technical	+45
Clerical	+30
Service Workers	+20
Sales Workers	+10
Skilled Workers	+10
Proprietors and Managers	+ 8
Operatives	+ 5
Laborers, except farm	- 9
Farmers and farm workers	-40 "[12]

It was determined by the John Adams Adult School officials and the project initiators that since there is an urgency in providing as thorough and immediate as possible training for adults in MDTA courses, that it would be well to use the project's Shorthand Structured-Learning Program with this MDTA Stenographer Entry course. An original starting date of August 31, 1965, was unavoidably delayed until Decemeber 13, 1965, when twenty-six students were selected to receive stenography training.

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[11] Merle Wood, "Programs for Underemployed and Unemployed," Business Education Meets the Challenge of Change, Washington, D. C., 1966.

[12] Loc. cit.

Since this experimental one-semester stenography course required students to have a minimum typewriting speed of 30 words per minute, it was necessary to begin this course by first teaching typewriting. From December 13, 1965, through January 14, 1966, in a daily two-hour class, for a total of 46 hours, students received instruction in typewriting. Five students were dropped from the program during this time: three students for non-attendance, one student dropped of her own volition, and one student transferred to a Clerk-Typist program. Thus, on January 17, 1966, when class instruction of this stenography course was started, there were 19 students enrolled in the stenography program. Seven additional students left the program after stenography instruction was started:

Duration of Class Attendance	Reason for Dropping	Progress (to Date)
23 days	Undetermined	Satisfactory
29 days	Marriage; transfer to Clerk-Typist program	Satisfactory
33 days	Child's illness	Satisfactory
37 days	Surgery	Superior
41 days	Death of husband necessitated prolonged absences	Less than satisfactory

(continued)

(continued)

Duration of Class Attendance	Reason for Dropping	Progress (to Date)
41 days	Insufficient time to study shorthand; transfer to Clerk-Typist program	Less than satisfactory
49 days	Insufficient time to study shorthand; transfer to Clerk-Typist program	Less than satisfactory

This class will be referred to as Group C and individual students will be listed as "1," "2," "3," etc. The descriptive data that follows in Table III pertains to the 12 students who completed the course.

The Business English Test was administered to this class during the second week of typewriting instruction. Their test was also mechanically scored at the Measurement Research Center in Iowa City.

At the end of the typewriting instruction on January 13, 1966, the minimum typewriting rate for a five-minute test was 30 words per minute; the maximum rate was 42 words per minute.

Data concerning individual students was obtained from student record folders. Table III shows the composition of this class classified by sex, age, grade completed, marital status, number of children, and scholastic standing. Since more than half of these women had obligations beyond educational pursuits that were not found with either Group A or Group B, the two additional columns, Marital Status and Number of Children, have been added to the composition picture of this group. While these obligations were unmeasurable factors and were not used in any way in this study, they were given as a matter of interest.

The writer feels comfortably safe in believing that you, the reader, will be able to infer some of the differences that were found in Group C that could not reasonably be expected to have existed in either Group A or Group B. Such differences, for instance, as home backgrounds, amenities of socio-economic levels, present living conditions and environments, outside school activities, and employment potentials.

This adult group was made up of twelve young women, ranging in age from 18 years to 22 years. Five of the women were married, four were single, and each of the three divorcees had the responsibility of one or more children. Only three of these women had completed twelve years of education and had high school diplomas. Four students had completed an eleventh grade education; one, the tenth grade; and four, the ninth grade.

The General Aptitude Test Battery was administered to all but one of these MDTA enrollees, which is the measuring device indicated in the "Scholastic Standing" column. Again, the reader is furnished this information to give as complete a picture as possible of the individual students at the time they entered the shorthand class. A description of the GATB is given in Appendix D.

Table III

Group C, Composition of Adult Class

Student	Sex	Age	Grade Completed	Scholastic Standing*	Marital Status	Number of Children
1	F	21	10	91	Married	2
2	F	21	12	80	Married	0
3	F	22	11	87	Divorced	3
4	F	19	11	112	Single	0
5	F	21	9	97	Divorced	2
6	F	19	12	106	Married	1
7	F	18	9	105	Single	0
8	F	20	9	86	Married	1
9	F	19	9	101	Single	0
10	F	18	12	N.A.**	Single	0
11	F	21	11	107	Divorced	1
12	F	21	11	79	Married	2

* General Aptitude Test Battery score, G factor.
**Not Available

Comparative data for the three experimental classes, Group A, B, and C, are given in Table IV. The initial enrollment in the Shorthand Structured-Learning Program for the three groups numbered four males and 83 females. The total number of subjects who completed the course was 72, 2 males and 70 females. The total dropout of 2 males and 13 females, or 17% of the total initial enrollment, can be considered a low dropout percentage for first-semester stenography classes.

Since a different intelligence measuring device was available for each of the three groups, it is not possible to show a correlation among the groups in the final achievement analysis. However, the Iowa Tests of Educational Development scores for the high school class, the Scholastic Aptitude Test scores for the college group, and the General Aptitude Test Battery scores for the adult class, will give the reader some indication of the calibre of intellectual range for each group.

Tables V, VI, and VII give the English and typewriting backgrounds for each group, A, B, and C, respectively, at the time of enrollment in the Structured-Learning Program. Again, as with the different intelligence measuring devices, this information is given to broaden the reader's picture of the three levels of students who participated in this project. Students in the adult class, Group C, had taken the fewest number of English classes per student than either Group A or Group B. The junior-year high school students had five semesters of English and the seniors had seven semesters of English. Group A, the college students, listed only the English courses taken beyond high school training. The college English courses ranged from a low of one semester to a high of a graduate's fifty-six units.

The C group of students also had received the smallest amount of training in typewriting. The number of semesters of typewriting instruction for Group C ranged from "no instruction" to a questionable "two semesters." Group A, the high school class, had a range of typewriting instruction from one semester to four semesters. The college class, Group B, listed both high school and college typewriting instruction. The range of typewriting instruction for the college class was from a low of one semester to a high of four semesters.

A generalized description of a typical student from each of the three groups follows.

At the time the project started, the typical student from Group A is seventeen years of age. She is entering her junior year in a comprehensive high school that is located in an industrialized city. She comes from a blue-collar income family who ranges in the middle socioeconomic level of society. The community and family influences on this girl have directed her into the school's business curriculum so that she will be able to find employment and to take care of herself after she graduates from high school. Her school grades are average and while she does not extend herself to be an outstanding academic student, she does see the value of attending class regularly and preparing herself for a job.

A typical student from Group B can be described as a young woman approaching her twenties. She is an undergraduate student with a liberal arts major. This young woman is enrolled in shorthand for two reasons. Her most immediate need for shorthand and transcription is to enable her to take lecture notes and increase the overall effectiveness of her study practices as she proceeds through the ever-increasing demands of a college education. The second reason she is enrolled in this class is to acquire a skill that will open the doors to employment when she graduates from college with a liberal arts degree. She recognizes that regardless of her academic training, employers still ask the questions: "What can you do?" "Can you type?" "Can you take shorthand?" She also recognizes that with her crowded and demanding academic pursuits, she can afford to give only one semester, or two semesters at the most, to secretarial preparation.

If the reader will accept life's experiences as adding to an individual's age, as well as the chronological passing of time, then the typical student from Group C can more aptly and appropriately be typified as a responsible mother of two children. She is from a minority race and she has seized upon the opportunity to learn secretarial skills under the Manpower Development and Training Act. While she has ambitions to raise herself and her family out of their present poverty circumstances, she needs constant assurance and encouragement from her instructors that she will be able to find a job. The influences of her home situation are constantly presenting problems that affect her school work. Frequently, she will bring her children to school with her rather than miss class because of a doctor's appointment or the baby sitter's failure to show up. There is a daily evolution in this young mother who begins to pay more attention to her personal appearance, to accept constructive criticism and to seek help. As she daily sees her progress and success with shorthand and typewriting, her study habits become more thorough and she is able to concentrate and work for longer periods of time.

Table IV

Composition of Total Experimental Classes, Groups A, B, and C

		A	B	C	Total
Subjects, Initial Enrollment					
Males		2	2	0	4
Females		35	29	19	83
Dropouts					
Males		2	0	0	2
Females		4	2	7	13
Dropout percentage of initial enrollment		19%	6%	37%	17%
Subjects, Completing Program					
Males		0	2	0	2
Females		31	27	12	70
Age Range					
Youngest		16	18	18	
Oldest		18	36	21	
Scholastic Standing		ITED	SAT	GATB	
High		96	88	112	
Low		5	2	79	
Grade Level					
High School	9			4	4
	10			1	1
	11	21		4	25
	12	10		3	13
College	13, low		1		1
	13, high		10		10
	14, low				
	14, high		1		1
	15, low		1		1
	15, high		5		5
	16, low		2		2
	16, high		3		3
Graduate			1		1
Majors					
High School	Business	24			
	College Prep.	4			
	Undeclared	3			
College	Art		2		
	Business		5		
	Business Education		4		
	English		4		
	History		1		
	Home Economics		1		
	Political Science		1		
	Social Welfare		2		
	Sociology		3		
	Spanish		1		
	Speech		1		
	Undeclared		4		

Table V
Group A, English and Typewriting Backgrounds

	ENGLISH			TYPEWRITING			
	Number of Semesters		Aver. Grade	Number of Semesters			Aver. Grade
Student	English	Total	Recd.	Beg.	Adv.	Total	Recd.
1	5	5	C	2	1	3	C
2	5	5	C	2	2	4	C
3	5	5	B	2	2	4	A
4	5	5	C	2	1	3	B
5	5	5	C	2	1	3	B
6	5	5	C	2	1	3	C
7	7	7	C	2	2	4	A
8	5	5	B	2	1	3	B
9	5	5	B	1			B
10	5	5	C	2	2	4	B
11	7	7	B	2		2	B
12	5	5	A	2		2	A
13	5	5	C	2	2	4	B
14	5	5	B	2		2	B
15	5	5	C	2	1	3	C
16	7	7	C	2		2	B
17	5	5	C	2	2	4	A
18	7	7	A	2		2	A
19	5	5	A	2	2	4	A
20	3	3	C	2	1	3	B
21	7	7	C	2	2	4	B
22	5	5	B	2	2	4	B
23	7	7	C	2	2	4	B
24	7	7	B	2	2	4	A
25	7	7	B	2	2	4	A
26	5	5	B	2	1	3	B
27	5	5	B	2	2	4	B
28	7	7	A	2		2	C
29	5	5	C	2	2	4	B
30	5	5	B	2	2	4	C
31	7	7	B	2	2	4	A

Table VI
Group B, English and Typewriting Backgrounds

	ENGLISH						TYPEWRITING			
	Number of Semesters						Number of Semesters			
Student	Gram.[1]	Bus.[2]	Comp.[3]	Lit.[4]	Total	Aver. Grade Recd.	High School	College	Total	Aver. Grade Recd.
1			2		2	B		1	1	A
2			2		2	C		1	1	B
3	3 phon.[5]		4	4	11	B	1		1	A
4			2		2	B	2		2	A
5			2	2	4	B	2		2	A
6							1			C
7			1		1	C	2		2	B
8			1		1	A	2		2	A
9			2		2	B	2		2	A
10			2		2	B		1	1	C
11		1	3	2	6	B	2	1	3	B
12			1		1	C	4		4	A
13	- - 56 units - -					B	2		2	B
14		1	2		3	C	2	1	3	B
15		1	2		3	B	4		4	B
16			2	1	3	C	2		2	A
17			2		2	A		1	1	A
18			1		1	A		1	1	B
19			1		1	B	2		2	C
20			1		1	B	4		4	B
21			1		1	B		1	1	B
22			1		1	B	1		1	C
23			2		2	C		1	1	C
24			2		2	C		1	1	C
25			1		1	C	4		4	B
26			2	4	6	B	2		2	C
27		1	2		3	B	2	1	3	B
28	1				1	C		1	1	C
29			2		2	A	3		3	B

---

[1] Grammar
[2] Business
[3] Composition
[4] Literature
[5] Phonetics

Table VII
Group C, English and Typewriting Backgrounds
(High School and Adult Education Classes)

	ENGLISH				TYPEWRITING			
	Number of Semesters			Aver. Grade Recd.	Number of Semesters			Aver. Grade Recd.
Student	Bus. Eng.*	Eng.*	Total		Begin.	Adv.	Total	
1	1	2	3	C	6 wks		6 wks	C
2	3	6	9	C	2 + 6 wks		2 + 6 wks	C
3	3	2	5	B	6 wks		6 wks	B
4	1	6	7	B	1 + 6 wks		1 + 6 wks	A
5	1	3	4	A	6 wks		6 wks	A
6	2	8	10	C	6 wks		6 wks	B
7		2	2	C	6 wks		6 wks	C
8		2	2	D	6 wks		6 wks	C
9		6	6	B	6 wks		6 wks	A
10		10	10	C	6 wks		6 wks	B
11	3	4	7	A	1 + 6 wks		6 wks	A
12	2	4	6	C	2 + 6 wks		2 + 6 wks	B

---

* Business English

** English including composition, literature and grammar.

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IV. MATERIAL DEVELOPMENT

A. Definition of Terms

SEMI-PROGRAMMED FORMAT: A physical columnar layout for theory presentations in a series of small associated word units. Writing space is provided for the learner to respond with a similiarly written shorthand outline. The learner always has a writing pattern to follow when constructing his own outlines.

HIGH FREQUENCY WORDS: Commonly known as Brief Forms in other methods of shorthand presentations. High Frequency Words (Brief Forms) are shorthand abbreviations for certain English words which are used very frequently. They are expected to be memorized by the student for automatic recall and instantaneous writing.

PROGRAMMED WORDS: The presentation of theory through "Programmed Words" is designed to move the student steadily toward a terminal writing response using new theory. The identifying characteristic of a specific writing theory is gradually built up, with the learner constructing outlines through given examples, so that he (the learner) can acquire instant writing responses necessary for intelligent understanding, based upon reasoning, recalling, associating, decision making, and mental organizing and coordinating.

SOUND AND PATTERN PRACTICE: A pair of words or group of words followed by a similar sounding pair or group of words that have the same pattern of writing. This practice is intended to build up subconscious and instantaneous writing habits upon hearing the spoken word(s). In this way, the theory of writing specific sounds introduced through Programmed Words is reinforced by Sound and Pattern Practice.

REINFORCEMENT: Through a reverse and associative sentence plan using words of the newly learned theory, the learner is given an opportunity to transcribe and write connected matter. The learner is constructing outlines from the patterned sentence which calls for independent and careful thinking.

REINFORCEMENT PLUS: A consolidation of all theory and High Frequency Words and Phrases learned to a certain point in the textbook. Reinforcement Plus is in the form of short letters, stories, extensive Sound and Pattern Practice, and three weeks of daily entries in a "New Employee's Diary." Reinforcement Plus follows Section I, Lesson 10; Section II, Lesson 15; Section III, Lesson 20; and Section IV, Lesson 25.

TEACHING-LEARNING TAPES: The teaching-learning tapes developed for each lesson in the textbook guide the students every minute in acquiring correct shorthand writing patterns by asking for active learner participation beyond the traditional shorthand dictation tapes. These tapes depart from the mere mechanical writing of shorthand at varying rates of speed. Rather, these teaching-learning tapes require the learner to be actively engaged in and concerned with his notes by having him listen, write, check, correct, review, and read aloud in unison with the dictator on the tapes. The tapes direct the learner to work back and forth with his textbook and with his own shorthand notes. In this way, he is not allowed to stray from concentrating on what he is hearing and writing, while being assured he is correctly constructing his outlines. The tape's reading and writing rates, as well as suggested transcribing rates, are at the average standards given for each lesson in the textbook. Also, the study patterns presented in the tapes offer a self-practice plan that can bring about a rapid progression based upon the abilities of the individual student.

READER IN ELEMENTARY ECONOMICS: A six-unit Reader in Elementary Economics was prepared to follow the Structured-Learning textbook. This interdisciplinary approach to reviewing the theory of writing shorthand is accomplished by discussing such elementary economic topics as our price system and how economic growth comes about; gold as an international medium of exchange and the importance of the Gold Standard; and unemployment, poverty, and automation. Each unit contains approximately 1,800 words, or a total of approximately 11,000 words, which reinforces the theory of writing shorthand and gives the student an opportunity to broaden his vocabulary and understanding of elementary economics. Future plans include Readers in areas such as medical, legal, science, and data processing.

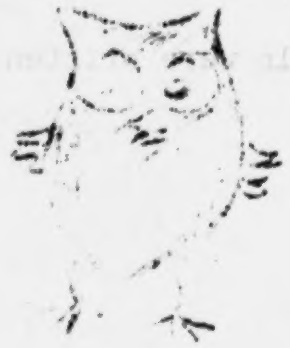
B. Textbook

Physical Description of Textbook

During the summer of 1965, June through the September opening of school, textbook materials were written and duplicated for the three experimental classes.

The textbook, Gregg Shorthand Structured-Learning Program, was reproduced on $8\frac{1}{2}$ x 11" paper, using the semi-programmed format. The textbook contained five major sections and an appendix. The lessons were duplicated on white paper. At the end of each section, gold-colored paper was used to present the transcript for the preceding lessons. The sectional transcripts were followed by Reinforcement Plus materials. It was decided that for this development phase of materials preparation, the Reinforcement Plus would adequately test the writing theory the students had learned in the previous lessons. For this reason, the Reinforcement Plus and testing materials were not duplicated at the time the textbook was assembled. These materials were reproduced as the semester progressed and were then inserted into the textbook to become a part of the book itself. These pages were reproduced on ditto masters and run off on gold-colored paper to correspond with the sectional transcripts.

An artist's drawing of a black owl was spaced intermittently throughout the text to add variety and interest to the topics of standards, study hints, progress, and reminders. The following is an example of this owl caricature:



Sectional Description of Textbook

Section I, containing Lessons 1 through 10, their transcript, and Reinforcement Plus, provided for:

a. a programmed introduction for writing what we hear,

b. the immediate automatization of the Gregg shorthand alphabet,

c. the automatization of 53 High Frequency Words and 43 frequently used phrases at the writing rate of one outline per second,

d. a two-lesson introduction to the semi-programmed format that is used throughout the book; namely, the presentation of theory through Programmed Words followed by connected dictation materials in the Sound and Pattern Practice and Reinforcement. The three types of presentations used a four-step perceptual learning plan:

1. Hear the word
2. Pronounce the word
3. Spell the word as pronounced
4. Write the word in shorthand

Since the four-step perceptual learning plan must become an instantaneous and automatic response within each student, it was incorporated into a separate Practice Plan for each type of presentation (Programmed Words, Sound and Pattern Practice, and Reinforcement),

e. an introduction to Motion Study that is emphasized throughout the textbook,

f. the beginning of typewriter transcription with Lesson 6. This early, and thereafter constant, transcription offers the learner opportunities to detect his own errors. This type of detection leads to intelligent transcribing based on the writing of legible and correctly proportioned outlines.

g. the introduction of suggested standards for reading shorthand plates and student's own notes, writing, and transcribing. The Sound and Pattern Practice, Reinforcement, and Reinforcement Plus materials were counted in actual words rather than the usual syllabic-intensity word counting base. The two reasons for using actual word count were (1) that it is more realistic to teach and hence prepare students for the stenographic employment tests they will encounter when applying for jobs which are frequently based on actual words, and (2) that since transcription is started in the sixth lesson, students can more easily and accurately judge the typewritten placement of their shorthand notes when transcribing.

Section II contained Lessons 11 through 15, their transcript, and Reinforcement Plus. Beginning with Lesson 15, all lessons thereafter, except High Frequency Word and Phrase Lessons, were divided into two parts, A and B. This division of lessons into parts A and B was provided to make the course content flexible enough to provide techniques for maintaining the interest of an average class and yet to allow and furnish challenging work for the talented students. This second section provided for:

a. the automatization of 22 High Frequency Words and frequently used phrases,

b. the continuation of theory presentations through Programmed Words, Sound and Pattern Practice, and Reinforcement using the four-step perceptual learning plan,

c. the continuation of emphasis upon Motion Study,

d. the continuation of typewriter transcription from the learner's own notes,

e. the continuation of suggested standards for reading shorthand plates and student's own notes, writing, and transcribing.

Section III contained Lessons 16 through 20, their transcript, and Reinforcement Plus. All lessons in this section were divided into parts A and B, except Lesson 18 which was High Frequency Words and Phrases. This section provided for:

a. the automatization of 25 High Frequency Words and frequently used phrases,

b. the continuation of theory presentations through Programmed Words, Sound and Pattern Practice, and Reinforcement using the four-step perceptual learning plan,

c. the continuation of emphasis upon Motion Study,

d. the continuation of typewriter transcription from the learner's own notes,

e. the continuation of suggested standards for reading shorthand plates and student's own notes, writing, and transcribing.

Section IV contained Lessons 21 through 25, their transcript, and Reinforcement Plus. All lessons in this section were divided into parts A and B, except Lesson 22 which was High Frequency Words and Phrases. This section provided for the automatization of 25 High Frequency Words and frequently used phrases and the continuation of items "b." through "e." as listed above.

The Appendix contained the following:

Common Geographical Endings and Abbreviations, Post Office Abbreviations for the fifty states, principal cities in the United States, and a Review of Word Beginnings and Endings and Common Phrases.

C. Tapes

In preparation for the production of tapes to accompany the textbook a close scrutiny of the commercially available tapes and records showed that they were of varying vocabulary and length and that the dictation was given at different speeds. In essence, the tapes and records were a transference to audio of the textbook dictation materials. The initiators' classroom experiences with these audio materials proved to relieve the teacher of having to dictate to the class, but they were not teaching the abilities the project initiators believe are necessary if students are to produce accurate transcripts. Thus, it was decided to approach the preparation and the recording of tapes so as to include more than dictation at varying rates of speed. So much emphasis has been given to only speed in writing shorthand, important as this is, that often correlating knowledge and skill has been neglected.

It can be said, therefore, that the objective in preparing the tapes to accompany this textbook was to make teaching more productive of the terminal abilities that stenography students must have to produce accurate transcripts.

In producing the scripts for the teaching-learning tapes, the definition of the transcription process as defined by Adams was used as a guideline. Hence, these teaching-learning tapes would contain characteristics of certain blended skills and knowledges as listed by Adams:

> "1. Fluent reading of shorthand notes.
>
> 2. Exact comprehension of the ideas involved.
>
> 3. Exact placement of punctuation.
>
> 4. Exact English construction
>
> . . .
>
> 7. Knowledge of spelling and syllabication.
>
> . . . "[13]

Teaching-learning tape scripts were written to cover the first ten lessons of the textbook. Tapes were cut following these scripts and they ranged in time from 10 minutes to 20 minutes. It was determined that these tapes should be experimented with in classroom situations before proceeding with further script writing and cutting of tapes. The steps followed in preparing the teaching-learning tapes were: (1) writing script, (2) recording tape, (3) trial use in classroom for teacher observations and teacher-student reactions, comments, criticisms, and suggested additions and/or deletions, and (4) editing script. These four steps are predicated on the assumption that four additional steps would follow; namely, (5) second tape recording, (6) second trial classroom use for further refinements and revisions, (7) final script editing, and (8) final recording.

---

[13] Elizabeth S. Adams, "Analysis of the Process of Transcription," Factors of Learning and Teaching Techniques, Fourth Yearbook, National Commercial Teachers Federation, 1938.

The teaching-learning tapes produced under this project have been designed to develop an instantaneous writing response to the spoken word by actively engaging the learner in writing shorthand, unison reading of plate notes and student notes, and the reviewing, correcting and interpreting of student notes. The theory of writing shorthand as presented in this book through Programmed Words was purposely omitted from the tapes. These words were not taped in order to avoid having the learners memorize mere lists of words. The Sound and Pattern Practice, Reinforcement, and Reinforcement Plus materials were taped with the express purpose of developing the learner's understanding of how to write connected dictation in a relaxed, accurate, and meaningful manner.

D. Instructional Films

Four instructional films were made at the Audio-Visual Center of the San Francisco State College. These instructional films run for four minutes and are fitted into a plastic self-winding cartridge. The cartridge is slipped into an Instant Movie Projector which projects a rectangular picture frame from approximately 5 x 8 inches to 12 x 15 inches. These instructional film cartridges can allow for individual, small group, or class observations.

The black and white film entitled "Gregg Shorthand Motion Study" demonstrates the correct motion patterns of writing shorthand. It illustrates fluency of writing and hand control. This film was made to accompany Lesson 4, Motion Study. It offers a suggested practice plan for students to follow to gain the rapidity and unhesitating writing motion that is necessary for constructing fast, well-proportioned, and legible shorthand outlines.

The film entitled "Sound and Pattern Practice," also in black and white, was made to accompany Lesson 5, which is the first lesson in Sound and Pattern Practice. This film demonstrates the suggested practice plan to be followed in working with the Sound and Pattern Practice in subsequent lessons. The film emphasizes writing with a free unhesitating motion, holding the pen close to the paper and moving quickly from one outline to the next with no waste motion, at the rate of one outline per second.

The beginning of transcription with Lesson 6 can be accompanied with a color film showing the transcribing process. This film, "How to Transcribe," illustrates how a stenographer should be able to turn to the typewriter and immediately begin to transcribe her notes. The film shows the fast motion of inserting paper into the typewriter, positioning of shorthand notebook, eyes being kept on the shorthand notebook while typing and returning typewriter carriage; proofreading the transcript before removing paper from the typewriter, removing transcript from the typewriter, and marking the shorthand notebook to show the transcription of notes.

"Speed Progression," another color film, illustrates the ease with which a knowledgeable shorthand writer can progress from 90 actual words a minute to 100 actual words a minute to 110 actual words a minute to 120 actual words a minute. This film illustrates that the increased rates of dictation do not alter the hand position or movement and that the legibility and proportion of shorthand outlines at 120 actual words a minute should be as quickly recognizible as at 90 actual words a minute. The writer in this film was a former student of the project initiators who had studied with the Structured-Learning Program's one-semester materials when they were in the infancy stage of development.

E. Overhead Projector

A lefthand roll-type overhead projector was used exclusively in the three experimental classes to present this Gregg Shorthand Structured-Learning Program. As the instructors wrote lengthwise down the acetate roll, they used their free hand to turn the roll handle. This roll-type overhead projector allowed them to write continuously without having to stop to clean the projected "frame" or to substitute a new transparency. The roll-type projector also allowed for reverse rolling so that any portion of the written material could be returned to the screen. The instructors found this feature to be helpful for reviewing, comparing notes, spelling outlines, previewing, and reading aloud.

One of the inherently favorable characteristics of Gregg shorthand is that it is not necessary to have an inked line for writing shorthand outlines. The instructors did not use any permanently drawn writing lines on the acetate roll to present the theory of writing. The absence of a writing line did not seem to be of any concern to the students.

F. Transparencies

The overhead projector was also used to present previously prepared transparencies.

Transparencies were prepared to present the shorthand alphabet, examples of motion study practice, High Frequency Words and Phrases, and materials from the Reinforcement Plus exercises. The transparencies were prepared in both single and overlay form. Longhand writing and shorthand writing could be flashed on the screen together when using overlay transparencies, or individual longhand or shorthand writing could be presented by lifting off the top overlay. When the longhand overlay was folded over and only the shorthand writing remained on the screen, or when using a single transparency, students were asked to read aloud to develop a fast recognition response. Individual words could be pointed to or sentences and paragraphs could be read at the direction of the instructor.

G. Charts

Wall charts were prepared to show the relationship of shorthand notes to the typewritten transcript. In using these charts, emphasis was placed upon the individuality of size of outlines that each writer will have when writing shorthand. Also, the charts were used to create an awareness within the student of the necessity to mentally visualize and relate the size of his notes to the typewritten transcript in determining vertical and horizontal placement.

V. USE, DATA, AND FINDINGS

A. Time Schedules

The experimental teaching of the Shorthand Structured-Learning Program, using the materials listed in Chapter IV, was started by the high school class, Group A, on September 13, 1965. This class met for fifty minutes, Monday through Friday. A daily time allowance of six minutes was allowed for roll taking, school announcements, return of papers, and the other commonly found classroom activities that precede actual instruction and study. The total hours of instruction per week for Group A was 3 hours 40 minutes.

Instruction for Group B, the college class, was started on September 20, 1965. Group B students met on Monday, Wednesday, and Friday. Six minutes per meeting was also subtracted from their instruction time, leaving a total of 5 hours 12 minutes per week. Table VIII shows the time schedules followed by the experimental classes, Groups A, B, and C.

It should be pointed out that in maintaining the desired objectivity in the use and evaluation of this Structured-Learning Program, the students in Groups A and B, teacher participant, project director, and project sponsor, determined through open-end discussions and evaluations that the textbook format could be improved. Thus, in October 1965 certain lessons in Sections II and III were revised to make more effective presentations and to enlarge the learner's opportunities for understanding by (1) broadening word selections, (2) adjusted writing, reading, and transcribing standards for particular shorthand theory, and (3) physical re-arrangement and placement of materials on the textbook pages.

Group A students, the high school class, agreed to spend three weeks working through the revised materials. The college students reviewed the new materials on their own time, but did not devote additional classroom time in actually working with the textbook revisions. These materials were later used with Group C, and it is felt by the project director and project sponsor that the changes have been worthy improvements to the overall effectiveness of the textbook and its accompanying instructional materials.

The Manpower Development and Training Act class, Group C, began their instruction with the Structured-Learning Program on January 17, 1966. They completed the textbook on May 6, 1966. This group met daily for a weekly total of 6 hours 10 minutes, again allowing six minutes a day for students to sign in, return papers, etc.

Excluding the time allowances given to Group A as delineated in Table VIII, this group received a total of 95 hours 50 minutes. The total instruction time for Group B was 72 hours 48 minutes and for Group C, 92 hours 30 minutes.

There seems to be no reason for the project initiators to doubt that the Structured-Learning Program could be taught within a time period of one semester, given normal teaching and classroom conditions. The reader will understand that there was considerable classroom time spent in caring for and discussing details of the project that would not be necessary in future classes. It was the express intent of the project initiators that all the materials undergo as close attention and scrunity as possible in this developmental phase.

Upon the completion of the textbook, Group A and Group B students worked with the Reader in Elementary Economics and its teaching-learning tapes, until the end of their respective semesters. Group C students were part of an on-going training program and at the time of writing this report, June 1966, they, too, were working with the Reader in Elementary Economics. Appendix E contains an excerpt of a unit from the Reader on Elementary Economics. This excerpt will give the reader an indication of the vocabulary and content of the Reader. The film, "Speed Progression," mentioned in Chapter IV, shows this material being written at a progressive ten-actual-words-a-minute rate; 90 actual words a minute to 120 actual words a minute. A copy of this film has been made to accompany this report. The film cartridge is being sent to the Department of Health, Education, and Welfare, Office of Education, to which interested persons may make inquiries for viewing the film.

Table VIII

Time Schedules Followed by the Three Experimental Classes to Complete Textbook, Gregg Shorthand Structured-Learning Program

Days Class Met	Times	Hours	Weekly Allowance for Roll Taking, School Announcements, Returning Papers, etc.	Hours Instruction Per Week	Experimental Class Started/Ended		Totals		Total Hours of Instruction
							Days	Weeks	
				Group A					
M,T,W,T,F	12:40 1:30	50 mins.	30 minutes	3 hrs. 40 mins.	9/13/65	4/29/66	149	30	112
							Days	Weeks	Hours
Less:	Three weeks for review of lessons due to misinterpretation of suggested standards and revision of textbook materials.						15	3	11
	Seven class dismissals for group discussions with teacher participant, project director, and project sponsor; classroom observations by visiting educators.						7	1(2 days)	5 hrs.10 mins.
							22	4(2 days)	16 hrs.10 mins.
TOTAL INSTRUCTION TIME							127	26(3 days)	95 hrs.50 mins.
				Group B					
M,W,F	11:10 1:00	1 hr. 50 mins.	18 minutes	5 hrs. 12 mins.	9/20/65	1/12/66	42	14	72 hrs.48 mins.
				Group C					
M,T,W,T,F	8:10 9:35	1 hr. 25 mins.	30 minutes	6 hrs. 10 mins.	1/17/66	5/6/66	74	15	92 hrs.30 mins.

B. Motion Study Analysis

The Reinforcement Plus exercises, which were added to the textbook as class instruction progressed, were used as end-of-section examinations to test achievement of the students to that particular point in their learning and to determine course grades. In addition, these student notes and transcripts were used to analyze what effect, if any, the Motion Study emphasis of this program had upon the legibility, proportion, and transcribing of shorthand outlines.

While overall observations were made of individual outlines and writing continuity, the project director and sponsor gave particular attention to comparing the following shorthand characters: A and E; K and G; R and L; N and M; T and D; B, P and left S; and V, F, and comma S. Time and clerical assistant limitations of this developmental project did not allow for as complete, thorough, and scientific analysis of Motion Study as the project initiators would have liked. However, it is the opinion of the project director, project sponsor, and teacher participant that:

1. these three groups of students wrote more highly legible shorthand outlines than other classes within their teaching experiences;
2. the results of the final examination, as discussed later in this chapter, will give statistical evidence of the student's ability to write, read, and transcribe his notes from unfamiliar material with a high degree of accuracy;

3. the students themselves found the Motion Study emphasis to be an aid in their writing as shown in Table IX. (This table shows student response to a questionnaire evaluating the course.)

C. Questionnaire

A questionnaire entitled "Evaluation of Shorthand Structured-Learning Program" was given to each group upon the completion of the textbook and following the final examination. Student responses to this questionnaire are given in Table IX.

The questionnaire was completed by 29 students from Group A, 25 from Group B, and 12 from Group C. The Group C students show a trend of more positive responses than either Group A or B. On the whole, all three groups responded in favor of the Shorthand Structured-Learning Program.

It is interesting to note that students in Groups A and C ranked the teacher third in order of the greatest help in their learning shorthand, while Group B students ranked the teacher fourth. It can be inferred from this ranking that Groups A and C leaned more heavily on their teacher than did the independent thinking college students in Group B.

Groups A and B ranked the overhead projector immediately after the teacher as being the greatest help, fourth and fifth, respectively. Undoubtedly, these two groups had a firm association of the teacher and the overhead projector being close to one and the same thing in aiding their learning shorthand. Group C students, on the other hand, evidently disassociated the teacher from the overhead projector even though all presentations were made by the teacher writing on the projector.

The college students ranked "transcribing own notes" in third position, while Group A ranked transcribing as fifth and the adult class, Group C, ranked transcribing as fourth. The ranking of transcription in this sequence by the three groups indicates that the independence of thinking and performing for themselves was more appealing to the college and adult classes than it was to the high school students.

A possible reason for Group B and Group C ranking the textbook first and the tapes second, while Group A ranked them vice versa, could have been a result of Groups B and C having spent more time outside of class studying with the textbook. This ranking also seems to show that the high school student is more dependent upon and attuned to the classroom for learning.

Table IX

Evaluation of Shorthand

1. Did you like the way this book was designed; that is, providing space for you to write and transcribe?

2. Did this book stimulate independent thinking and understanding of what you were writing?

3. Did you like the owl caricature and his words of encouragement and suggestions?

4. Did you find this book to be dull or uninteresting?

5. Did you like the different colors of paper?

6. Did you enjoy working through the Programmed Words?

7. Did the Sound and Pattern Practice adequately cover the theory learned in the Programmed Words?

8. Did the Reinforcement Sentences adequately bring together the Programmed Words and Sound and Pattern Practice?

9. Did you find the High Frequency Words and Phrases easy to learn?

10. Should the High Frequency Words in Lesson 22 and 26 have been in earlier lessons?

Table IX

Structured Learning Program

Group A			Group B			Group C			Total		
Yes	No	Undecided	Yes	No	Undecided	Yes	No	Undecided	Yes	No	Und.
28	1		24	1		11	1		63	3	
26		3	20	1	4	12			58	1	7
23	4	2	17	3	5	9	1	2	49	8	9
3	24	2	1	22	2	1	11		5	57	4
24	2	3	21	1	3	8	3	1	53	6	7
20	7	2	22		3	12		3	54	7	5
28		1	23		2	11		1	62		4
27	1	1	23	2		12			62	3	1
20	6	3	25			12			57	6	3
18		11	15	2	8	9	2	1	42	4	20

11. Did you find the standards of reading, writing, and transcribing to be at comfortable rates?

12. Did you find the Reinforcement PLUS to be an adequate measurement of what you had studied in previous lessons?

13. Should more Reinforcement PLUS have been provided?

14. Did you find your Motion Study Practice to be an aid in writing well-proportioned, legible outlines?

15. Do you use the four-step learning plan (hear, say, spell, write) when constructing outlines for new words?

16. Did you find it easy to comprehend your own shorthand notes?

17. Did you like to transcribe on the typewriter your own notes early in the course?

18. Has this course increased your interest in wanting to become proficient with shorthand and transcription?

19. Do you have a greater respect for positions requiring the use of shorthand?

20. Was the classroom atmosphere conducive to learning shorthand?

21. Has this study of shorthand helped you in other classes?

Group A			Group B			Group C					
Yes	No	Undecided	Yes	No	Undecided	Yes	No	Undecided	Yes	No	Und.
18	5	6	22	1	2	10	1	1	50	7	9
25	2	2	21	3	1	10	1	1	56	6	4
20	8	1	3	21	1	2	9	1	25	38	3
23	3	3	22	1	2	10	1	1	55	5	6
25		4	22		3	11	1		58	1	7
23	5	1	20	1	4	8	2	2	51	8	7
25	3	1	23		2	9	3		57	6	3
22	5	2	24		1	12			58	5	3
24	3	2	23		2	12			59	3	4
24	3	2	22		3	8	3	1	54	6	6
10	9	10	20	2	3	1	9	2	31	20	15

Rank the following (first, second, third, etc.) in the order of their greatest help to your learning shorthand:

To which of the above do you think more class time should have been devoted?

Approximately how much time away from class--per week--have you spent on the study of shorthand?

What suggestions can you make for improving the textbook, tapes, overhead projector writing--or any ideas to improve the course as a whole?

What do you intend to do with your shorthand skill?

Group A	Group B	Group C
Tapes	Textbook	Textbook
Textbook	Tapes	Tapes
Teacher	Transcribing own notes	Teacher
Overhead projector	Teacher	Transcribing own notes
Transcribing own notes	Overhead projector	Films
Films	Films	Overhead projector
Transparencies	Transparencies	Transparencies
Tapes	Tapes	Tapes

	Group A	Group B	Group C
High	12 hours	10 hours	14 hours
Low	4 hours	5 hours	7 hours
Average	7 hours	8 hours	10 hours

Concensus of Group A, B, and C that they would have liked tapes dictating materials not found in the textbook and more class time to transcribe their notes.

This question brought the obvious answer; as expressed by a member of the adult class, "Use it!" In general, the adults in Group C, thought the question was superfluous.

Group A students most frequently responded "to get a job when I graduate," and "in case I go to college, I'll need it."

Group B students, other than the four teacher trainees, said they were taking the course to provide a way for taking notes while in college and to enable them to find a job.

D. Analysis of Data and Findings

To evaluate the results of this Structured-Learning Program, a final examination was administered immediately upon completion of the textbook and its accompanying materials. The test was taped so that the three groups would receive the identical final examination and so that there would be no variance in speed of dictation, pronounciation, voice inflection, or the admission of any other variable that could influence the test results. The test consisted of two letters. The first letter contained 165 total actual words dictated at the rate of 60 actual words per minute. The second letter contained 163 total actual words dictated at the rate of 80 actual words per minute. Thus, there was a total possible score of 328 actual words to be written in shorthand and transcribed. No part of the taped material was previewed for the three groups. The tests were scored by reading the students' shorthand notes and transcripts. One point was deducted from the total word count for any word omitted or substituted in the transcript. The primary concern of this examination was to determine whether or not students at these three levels, high school, college, and adult education, after having used the same Structured-Learning Program, would be able to write a legible, well-proportioned outline for unfamiliar material and then be able to read what they had written by transcribing their notes on the typewriter.

A test of the hypothesis that the three groups would score the same in the final examination was made, using the Kruskal-Wallis H test.[14] Analysis of variance was not an appropriate statistical device to use in this study of the final examination grades since Bartlett's test indicated that the three groups did not have homogenous variances.[15] The results of the H test show that the three groups are essentially the same in achievement as measured by their final examination grades.

Table X
Final Examination
Means by Groups

Group	Means
A	292.12
B	266.83
C	259.42
Total	275.3

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[14] William H. Kruskal and W. Allen Wallis, "Use of Ranks in One-Criterion Variance Analysis," Journal of the American Statistical Association, Vol. 47 (December 1952).

[15] Helen M. Walker and Joseph Lev, Statistical Inference (New York, 1953).

Table XI

H Test

$$H = \frac{12}{N\,(N + 1)} \sum_{j=1}^{k} \frac{R_j^{\,2}}{N_j} - 3\,(N + 1)$$

$$H = 1.56$$

The calculated value of H (1.56) is significantly less than the critical value of X^2 at 5% (5.991), so the hypothesis is accepted.

The final examination grades are shown in Table XII for Group A, in Table XIII for Group B, and in Table XIV for Group C.

Table XII

Final Examination

Group A

Student	60 wpm (165 actual words)	80 wpm (163 actual words)	Total (328 actual words)
1	135	148	283
2	114	135	249
3	165	160	325
4	96	100	196
5	158	150	308
6	137	108	245
7	159	152	311
8	105	112	217
9	164	161	325
10	158	161	319
11	165	163	328
12	161	153	314
13	163	160	323
14	165	160	325
15	159	158	317
16	128	124	252
17	160	143	303
18	134	149	283
19	146	136	282
20	165	158	323
21	164	133	297
22	133	133	266
23	162	141	303
24	152	153	305
25	134	138	272
26	164	160	324

$\underline{n}$ = 26
x - 292.12

Table XIII

Final Examination

Group B

Student	60 wpm (165 actual words)	80 wpm (163 actual words)	Total (328 actual words)
1	165	162	327
2	120	50	170
3	163	153	316
4	162	151	313
5	144	117	261
6	163	144	307
7	162	124	286
8	165	163	328
9	164	161	325
10	124	97	221
11	162	151	313
12	162	153	315
13	165	159	324
14	149	86	235
15	165	131	296
16	144	117	261
17	150	145	295
18	165	160	325
19	155	139	294
20	164	147	311
21	161	150	311
22	164	161	325
23	125	128	253
24	109	20	129
25	157	55	212
26	120	50	170
27	119	50	169
28	122	0	122
29	160	64	224

$n = 29$
$\bar{x} = 266.83$

Table XIV

Final Examination

Group C

Student	60 wpm (165 actual words)	80 wpm (163 actual words)	Total (328 actual words)
1	145	67	212
2	147	98	245
3	155	141	296
4	159	160	319
5	162	159	321
6	150	146	296
7	112	0	112
8	97	0	97
9	135	126	261
10	161	161	322
11	158	150	308
12	164	160	324

$n = 12$
$\bar{x} = 259.42$

The results of the Business English Test scores for the three groups are given below in Table

Table XV

Business English Test

Group A		Group B		Group C	
1	85	1	104	1	69
2	60	2	95	2	65
3	88	3	98	3	80
4	66	4	89	4	92
5	73	5	87	5	83
6	90	6	68	6	73
7	88	7	85	7	78
8	75	8	96	8	45
9	82	9	101	9	83
10	83	10	91	10	66
11	94	11	89	11	85
12	71	12	94	12	66
13	82	13	95		
14	93	14	88		
15	93	15	88		
16	76	16	90		
17	68	17	104		
18	85	18	107		
19	73	19	66		
20	93	20	98		
21	84	21	94		
22	89	22	93		
23	101	23	68		
24	86	24	80		
25	101	25	83		
26	95	26	100		
		27	90		
		28	92		
		29	102		
$n = 26$ $\bar{x} = 83.62$		$n = 29$ $\bar{x} = 90.86$		$n = 12$ $\bar{x} = 73.75$	

Again, Bartlett's test was used to test the hypothesis that all students were from the same population in respect to variance on the Business English Test scores.[16]

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[16] Ibid.

The results of Bartlett's test showed that the variances within the three groups are homogenous. The hypothesis that the mean scores on the Business English Test are the same was tested with a one-way analysis of variance.[17]

The analysis of variance test showed that the hypothesis could be rejected; that the differences in the Business English Test scores are not due to chance. Since the calculated F value of 10.78 exceeds the critical value of F at the one per cent level (4.98), the differences are significant and the hypothesis is rejected.

Table XVI

Analysis of Variance Table
Business English Test
Groups A, B, and C.

Source of Variation	Sum of Squares	Degrees of Freedom	Estimate of Variance	F
Between Groups	2,565.14	2	1,282.57	10.78**
Within Groups	7,613.85	64	118.97	
Total	10,178.99	66	---	

**Significant at the 1 per cent level.

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[17] Ibid.

It can be concluded that even though the three groups were significantly different in their English achievement as measured by the Business English Test, they attain essentially the same level of proficiency in the final shorthand and transcription examination.

VI. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

A. Conclusions

It can be concluded from the findings of this developmental project:

1. That the one-semester stenography course, Shorthand Structured-Learning Program, developed under this project showed no significant differences in the shorthand writing and transcribing abilities of students at three levels of educational achievement; high school, college, and adult education.

2. That the Structured-Learning Program combining the writing of shorthand and beginning transcription was taught within a time interval of a low of 72 hours 48 minutes to a high of 95 hours 50 minutes, which time interval falls within a generally accepted one-semester time period.

3. That the shorthand textbook and its accompanying teaching-learning materials developed under this project contain:

   a. theoretical presentations that are correct, simple and general;

   b. terminology that is correct, consistent, and understandable.

4. That the Shorthand Structured-Learning Program is a teachable course and adaptable to the needs of average and talented high school, adult education, and college students.

5. That the results of an English test could not be used as a reliable predictor of success with the Shorthand Structured-Learning Program.

6. That the Shorthand Structured-Learning Program is a flexible course that can be adapted to various time limitations of instruction.

B. Implications

The implications of this pilot study seem worthy of being brought to the attention of business and academic educators, administrators, curriculum coordinators, and organizational planning people at all levels of education. The following paragraphs are written with the ideas in mind that introduced the reader to Chapters I and II of this report.

The first, and perhaps most crucial implication that can be drawn from this pilot study pertains to the people working with the Manpower Development and Training Act program. The group of MDTA adults in this project, as stated earlier, were from minority races, from various types of backgrounds, and with little or no educational successes. Yet, after working for a few months with the stenography program as offered at the John Adams Adult School, these women were able to orient much of their thinking and attitudes toward finding a place for themselves in the job market. It seems very likely that the Shorthand Structured-Learning Program gave them a needed realistic approach to learning stenographic skills. They could immediately see and understand the necessity of writing legible and correct outlines; the necessity of developing their typewriting skills; the necessity of coordinating the physical and mental functions that are demanded of a stenographer trainee. The important aspect of the program was that they were actively engaged in a method of learning at which they could succeed.

An equally important point to bring out about this study is the time interval spent in working through the Structured-Learning Program. A high of 95 hours to a low of 72 hours to complete this program (shorthand and beginning transcription) leads to a favorable comparison of it over the traditional two-semester beginning shorthand time allowance. Today, the generally accepted plan for teaching stenography is to spend two semesters, approximately 80 hours classroom instruction per semester, or 160 hours classroom instruction, learning only to read and write shorthand. Then, a second year, approximately 160 hours classroom instruction, is spent teaching shorthand and typewriter transcription.

It seems reasonable and feasible to believe that the Shorthand Structured-Learning Program can reduce by half the amount of time presently being used to train stenographers. The Shorthand Structured-Learning Program meets today's trends by providing a program that shortens instruction time, applies an interdisciplinary approach to instruction, and presents a flexible program for both the average and talented students.

C. Recommendations

The following recommendations are made on the basis of the findings and conclusions of this experimental project:

1. That a second phase of this developmental project be made as soon as possible.

2. That the Phase II project be a large scale experiment to compare, contrast, and evaluate the Shorthand Structured-Learning Program developed under this project, Phase I, with the traditional course materials and presentations now in use.

3. That four educational levels should participate in Phase II; namely, adult education, high school, junior college, and four-year college.

4. That an equal number of control and experimental classes participate in Phase II where uniformity of educational background for each level of education could be used for comparative purposes.

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APPENDIX A

The Business English Test is one of a series of three vocational tests prepared by Dr. John T. Dailey, Director of the Education Research Center at The George Washington University. Dr. Dailey served as Program Director of Project TALENT, a government-sponsored survey of the psychological characteristics of the nation's youth, from 1958 to 1964. Dr. Kenneth B. Hoyt, Professor of Education at the State University of Iowa, is Director of the Specialty Oriented Schools Research Program, and he served as Vocational Consultant in the preparation of The Dailey Vocational Test Series.

The 30-minute Business English Test measures knowledge of the fundamentals of English essentials in secretarial, clerical, and business careers. The examination contains 111 sentences which tests recognition of grammatical errors in punctuation, spelling, capitalization, and correct usage and grammar. Within each sentence is one kind of error, or no error, and the examinee must recognize and indicate the type of error, if any, that occurs in each sentence.

The Business English Test is used as a guide for counseling junior and senior high school and specialty school students who are considering business training or secretarial occupations such as secretary, stenographer, or clerk-typist.

The three normative studies made for this test were from:

a. a stratified sample of public high schools, grades 9 - 12, where approximately 12,000 females were given the Business English Test;

b. approximately 3,000 business-secretarial school students to obtain a norm by area of specialization, and

c. selected business and industrial employees to obtain industrial norms.

The publisher of the Business English Test is Houghton Mifflin Company. Electronic scoring services may be obtained from the company.

APPENDIX B

The Iowa Tests of Educational Development are published by Science Research Associates, Chicago, Illinois. This test is given to all students in their junior year at El Camino High School.

The Iowa Tests of Educational Development is made up of nine different tests, designed to measure the educational growth of high school students. Rather than concentrating on knowledge of names, dates, and formulas, the tests have been prepared to cover a broad intellectual understanding and skill and the ability to use what has been learned. Science Research provides a national percentile score, called the national median, to allow local school comparisons with national percentiles.

The nine areas covered by the Iowa Tests of Educational Development are: (1) Social Studies Background, (2) Natural Sciences Background, (3) Correctness of Expression, (4) Quantitative Thinking, (5) Reading--Social Studies, (6) Reading--Natural Sciences, (7) Reading--Literature, (8) General Vocabulary, and (9) Use of Sources of Information. A composite score is made of Tests 1 through 8. This composite score provides an over-all picture of the student's abilities in the skills numerated above.

APPENDIX C

San Francisco State College uses the Scholastic Aptitude Test (SAT) to test entering lower division students. The purpose of this test, as used at San Francisco State College, is to determine the reasoning ability of students at the bright adult level to provide an estimate of their liberal arts scholarship potential.

The verbal portion of the test is 90 minutes in length and consists of ninety completion items, opposites, analogies, and paragraph comprehension. This section measures the ability of the student to read with understanding, to reason with verbal material, and to perceive word relationships. The reading passages are drawn from a variety of fields, such as the humanities, science, and social sciences.

The mathematical portion of the test is 60 minutes in length; and its sixty items cover arithmetic reasoning, algebra, and elementary geometry. It measures the ability to understand and to solve problems, stressing reasoning rather than specific course content of secondary school mathematics.

The SAT scores are reported as standard scores with a range of 200 to 800 and a mean of 500 and a standard deviation of 100. The SAT scoring formula is Rights -.25 Wrong. The SAT scholastic standing percentile equivalents given on page 26 for Group B students were based upon the scores of 1371 lower division SFSC students who registered for the 1964 fall semester and for whom cumulative GPA/s were available at the end of the 1964-65 year.

APPENDIX D

The General Aptitude Test Battery, GATB, is composed of nine sections. The Test battery covers (1) verbal aptitude, (2) numerical aptitude, (3) spatial aptitude, (4) form perception, (5) clerical perception, (6) motor coordination, (7) finger dexterity, (8) manual dexterity, and (9) the G factor, representing the testee's overall aptitude. The G factor derived from this battery is roughly equivalent to an individual's learning abilities, or intelligent quotient, as derived from its spatial, verbal, and perception aptitude results.

This test was developed and validated by the United States Department of Labor, Bureau of Employment Security. It has been analyzed by Dr. Donald Super, Teachers College, Columbia University; Dr. Patterson of the University of Minnesota; and Dr. Dvorak of the United States Employment Service. Reliability and validity factors were obtained as a result of measuring and testing with 4,000 individuals, 50% male and 50% female. This sampling was stratified by occupations according to the 1940 census, excluding agricultural occupations. The figures were also stratified by age and education. Individuals taking the test must be at least sixteen years of age, with no upper age limit, and must have had at least six years of schooling in the United States.

The participants in this project were administered the GATB under its standard condition requirement of no less than eight persons nor more than twenty persons being examined at one time. The test is two and a half hours in length. The primary purpose for administering the GATB

to this project's Group C. students was to aid counselors in determining the individual's strong and weak points and whether or not the individual showed an aptitude to enroll in this Stenography Entry course, No. 5057-007-I, Manpower Development and Training Act.

APPENDIX E

Reader in Elementary Economics
Unit Excerpt

When the country was young, a man's standard of living)
depended in large measure on his skill, initiative, strength,
and wisdom. With his "good right arm" he wrested a living for)
himself and his family from forest, field and stream.

) 90 actual

The attitude prevailed that poverty was "God's judgment words per
against the undeserving." Poor people consoled themselves) minute
with the thought that riches would come if only they made
themselves more deserving--if only they were able to work)
harder and develop more wisdom. Although most people were
poor and remained so, they had hope. They also had Mother) - - - - -
Nature to provide them with fish and game, free for the taking.

)

Then the virgin woodland was cut down and in its place
sprouted a thicket of smoking factories. Before long a man's)
standard of living came to depend, not only on his skill,
initiative, strength and wisdom, but also on an incredibly)100 actual
intricate mechanism of assembly lines, offices and stores to words per
provide him with the opportunity to work.)minute

Although the American economy made great strides, progress)
was not steady. A crisis occurred in the 1930s and strong
right arms by the millions were reduced to reaching for doles) - - - - -
of thick bread and thin soup. Workers, who had lost the ability
to achieve economic security by individual action, sought it)
collectively through large unions and strong governments.
Programs such as Social Security, Unemployment Compensation,)
relief and public welfare helped many escape the hobnailed 110 actual
heel of want. The continuation of such governmental activities)words per
is thought by many to be one reason why we have avoided major minute
depressions and improved the lot of the poor over the last)
20 years.

Another reason, perhaps more important, is the technological
revolution that was nourished so effectively by World War II.)
New methods and machines have increased the productivity of - - - - -
American workers tremendously in the space of a few decades.)
Able to produce more, most of us have been able to buy more and
the general standard of living has risen to a level that our)
grandfathers never even dreamed of.

LIVING WITH CHANGE IN AMERICA. It's ironic, but the)
technological revolution which opened the door to prosperity 120 actual
for the majority, also slammed that door tight shut in the face)words per
of a sizeable minority. The essence of the revolution is minute
change--accelerating and pervasive change. Not only has the way)
we produce goods in our factories undergone sweeping change but
so has the way we sell groceries, teach school, heal the sick,)
and raise crops, to give but a few illustrations.

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